REMARKS

The specification, page 2, has been restored to its as-filed wording.

The claims have been amended to clarify the presentation of the inventive aspects. Claims 8 and 9 have been amended to delete "cellulosic" which did not appear in the original claims.

I. Summary of Invention

The claims were rejected over Wang et al, '880, as principal reference, in view of new reference Anderson et al, '864.

As clarified by the amendments, the invention of claims 1, 2, 23, and 24 concern novel wet-wipe products having a volume-enhanced, *enduring* ridge and groove web structure. The structure survives prolonged presence of wet-wipe liquid and repeated squeezing and release. After the wetting and squeezing, the product "bounces back" to its ridge and groove form due to spring-like nature of the heat-set thermoplastic dry-creped fibers.

For this important feature the products depend upon the web comprising at least 20%, by weight thermoplastic fibers capable of being heat set to a permanently deformed shape when deformed at elevated heat-set temperature of the polymer. Indeed, in highly preferred cases, at least 33 1/3 % of the fibers are of the thermoplastic, claim 8. Most preferably about half the fibers are the thermoplastic, claim 10.

The products require this web to be in dry-creped heat set state. This means that the web, introduced dry to the microcreper has been pressed physically with a pressing surface against a moving, gripping surface and mechanically driven forward to collapse against retarded material. Thus the product has ridges and grooves in the overall body of the web that are permanent due to heat-set of the deformed thermoplastic fibers of the web.

When the ridges are coarse, the products also provide important stress-concentrating scrubbing edges, claims 3-8. Despite prolonged wetting and squeezing, the web preserves its volume-enhanced structure and coarse scrubbing edges.

The claims have been amended to more clearly define these products.

II. Summary of Argument

Applicants believe the claims now presented are clearly patentable over the references of record.

As we explain more fully later:

(1) Wang et al, is directed to a ***water-disintegrable web.*** We submit Wang et al. cannot properly be cited as the primary reference against the claims that define a ***water enduring structure***, as now clarified.

(2) In any event, no combination of the cited references teaches the critical three simultaneous requirements:

(i) the web MUST contain at least about 20% thermoplastic fibers, preferably more than 33 1/3 %, or indeed about 50%;

(ii) the web MUST be in dry-creped state by microcreping with ridges and grooves formed in the overall body of the web; and

(iii) this creped web MUST be in heat-set state by which the dry-creped form of the ridges and grooves endures after prolonged presence of water or squeezing, due to heat-set of the creped thermoplastic fibers in the ridges and grooves.

It takes meeting these three simultaneous requirements to form water-endurable ridges, grooves and scrubbing edges, which simply is not taught by the references.

(3) According to the usage of Anderson et al "Microcreping is a mechanical softening step," "in which the web is creped from a creping drum, such as a Yankee drier..."

This is not the dry microcreping of the claims. A Yankee drier works by introducing *a wet web to a drier drum* to which it adheres to be carried forward. This is clearly a different process from physically pressing a *dry* web against a moving, gripping surface that mechanically drives it forward to collapse and crepe. Nor would Anderson et al necessarily heat set.

III. Clear Basis in the Specification for the Claimed Limitations

Applicants' specification says "A minimum of about 20% heat settable thermoplastic fibers is required, for enabling formation of the permanent creped structure that restores the internal, adsorbent volume of the wipe when pressure on the wipe is released", page 10, line 19-

21. By far, the preferred concentration is above about 1/3 by weight, page 10, line 5-7, claim 8; in important instances about equal weight thermoplastic fibers and cellulosic fibers, claim 9.

Page 2 of the specficication: "'Dry-creping' referred to here means creping a preformed web without the web being adhesively adhered to a surface (as in a Yankee dryer)..."

For dry creping, Figs 10 and 13 of the present application clearly show the web, introduced dry, is physically pressed from one side against a driven gripping surface at the other side. The dry web is thus mechanically driven forward to collapse against retarded material. This is a single pass treatment. The web collapses bodily, forming successive ridges and grooves in the *overall body of the web*, page 14, line 1 and 7; page 15, line 19 to page 16, line 7. In the example described, a bladed microcreper available from Micrex, Incorporated, was used for the dry treatment though the other microcreper machines cited there in the specification can be used to advantage.

Therefore, clearly the dry creped web of the present invention is not introduced wet to a drier drum such as a Yankee drum.

For the required thermoplastic fiber content being heat-set in the dry-creped condition, see the examples of page 17. While dry creping, the web was exposed to surfaces heated to 365°F when the fibers were of polyester. The surface was heated to 270°F when the fibers were polypropylene. As noted in the specification on page 8, line 7, heat of friction on the dry web, as when running very fast, can also provide such heating for heat-set of fibers.

The resultant, water-enduring ridges and grooves are in the "overall body" of the web, i.e. not a one-sided effect.

IV. Clear Basis in the Specification for the Bounce Back and Water Enduring Attributes of the Products

The specification says, page 3, line 13-28: "...[T]he creping with heat set increases the recoverable internal volume... after being squeezed to deliver liquid, and then released, the liquid carrying volume is recoverable, i.e. the web swells by itself...[and] the reciprocal ability to desorb liquids is [also] increased. Thus a treated wipe can absorb a liquid, then when squeezed or subjected to wipe pressure, it can desorb to deliver the liquid to the surface being wiped, subsequent to which it can resorb the liquid to remove liquid along with picked-up contaminant

from the wiped surface. Both sorbing and desorbing characteristics of the web are increased by the creped, heat set thermoplastic network of fibers...The treatment enables...an effective pumping action..." Thus applicants clearly teach that the wipes of the invention have a spring-like quality.

If the web has been coarsely dry-creped (a maximum of about 25 crepe ridges per linear inch), "the resultant coarse ridges in the fabric contribute to enhanced performance", page 2, lines 5 and 6. Wet wipes that can achieve a vigorous wiping action have "...a gross coarse crepe [with] the heat set ridge frequency...between about 8 and 15 per lineal inch. The resultant strongly pronounced ridges effectively provide wipe-stress-concentrating edges that enable high wiping pressure...to be applied to the edges (the entire wiping force thus being distributed over a relatively low aggregate length of relatively sharp edges)", page 3, lines 1-6. A novel scrubbing effect is achieved, as well, with moderately coarse ridge formations, i.e. between about 15 and 20 heat-set ridges per lineal inch "...the greater density of ridges spread the wiping force over a longer aggregate ridge length, producing lower, but still significant contact pressure at the ridge edges", page 4, line 4-5. Thus the scrubbing edges are clearly taught.

Another novel attribute of the product, "...which is important, e.g. for the vigorous and moderate action wipes, is the effect obtained in wiping a smooth surface such as glass or metal plate... This has to do with a vacuum-release effect achieved by the permanent fluid-resistant ridge and groove structure, which is particularly noteworthy when employing gross coarse crepes heat-set in the wet wipe. Despite the sheet member having a high fluid carrying capacity, it is found, during use, that the troughs of the sheet are not completely fluid-filled, i.e. continuous air channels are preserved between adjacent ridges, which communicate with ambient...[these] reduce the total wiping effort required, believed to be due to the presentation of the vacuum-releasing air channels", page 4, line 16 through page 5, line 2.

V. Argument

(1) WANG ET AL NOT A PROPER PRIMARY REFERENCE FOR REJECTING THE CLAIMS

Wang et al is only concerned with a fabric that is, "***capable of dispersing in an aqueous environment into unrecognizable pieces***," abstract line 2, 3. Thus, Wang et al teaches *in the*

opposite direction from the present invention. Wang et al is not relevant to a wiping product that, after prolonged presence of water, instead of disintegrating, as in Wang et al, retains an enhanced capacity to carry liquid between ***enduring ridges and grooves***, claims 1, 2, 23 and 24. Neither does Wang et al have any suggestion of concentrating wiping-stress of ridges in a ***coarse creped web, claims 3-8.***

Anderson et al cannot substitute as primary reference as it also lacks teaching of the products of the claims.

Anderson et al is directed only to achieving a web with a "cloth-like look and feel" with improved absorbency that is "*very soft*". Specifically, the key teaching of Anderson et al is use of conventional one-sided creping, by adhering the web to a drum in a pattern and scraping it off, preferably followed by repeating the treatment on the other web side. By adhering in a *pattern* and creping the regions of the pattern, Anderson et al aims to achieve a *pattern of tiny raised areas* to provide appearance and feel of a soft, woven textile fabric, see abstract and col. 14, l. 27 and col. 15 l. 7. Anderson et al, like Wang et al, is aimed in a *different direction* from Applicants' "bounce back" permanent creped structure, and fails to make up for the lack of motivation of Wang et al. In particular, Applicants' coarse "scrubbing" edges of claims 3-8 are the opposite of ***softness***, the direction of the Anderson et al teaching, and the thought underlying the examiner's rejection.

(2) THE COMBINATION OF CRITICAL RELATIONSHIPS REQUIRED BY THE CLAIMS IS NOT FOUND IN THE REFERENCES

Specifically there is no fair teaching by the references that:

(i) the web MUST contain more than 20% thermoplastic fibers, preferably more than 33 1/3 %, preferably about 50%.

(ii) the web MUST be in dry-creped condition to have ridges and grooves in the overall body of the web, preferably a coarse distribution of the ridges and

(iii) the creped web MUST be in heat-set state whereby the form of these ridges and grooves endures after prolonged presence of water or squeezing, due to heat-set deformation of the constituent thermoplastic fibers in the creped ridges and grooves in the overall web.

The Examiner has already recognized that Wang et al is deficient in not teaching dry microcreping. But Wang et al is far more deficient than that. We have shown that Wang et al is motivated in the *opposite* direction, toward water disintegration. Anderson et al. is bereft of teaching a product such as here claimed. Mere mention of thermoplastic fibers by Wang et al without any focus, or with the wrong focus, does not fairly teach the critical requirement of *there having to be at least 20% thermoplastic fibers* for the dry creped state to enable the crepe structure to endure wetting.

Anderson et al. does not make up for the deficiencies in Wang et al. The key teaching of Anderson et al, is summarized in its claim 1. Apply "a bonding material...to at least a first side of said web according to a predetermined pattern, at least said first side of said web being creped after application of said bonding material, said first side of said web being creped where said bonding material has been applied," Anderson claim 1.

In the preferred example of Anderson et al, Fig 2, and in claim 28, this "patterned" bonding is applied to both the first and second sides of the web, and is creped using first creping blade 64 and second creping blade 82, see col. 11, lines 41-58.

The Anderson et al mention of softening by his version of subsequent "microcreping" from a creping drum such as a Yankee drier is only as an optional step to be added to the critical patterned bonding step, and only for *softening* of that structure!

This is not applicants' microcreping or "dry-creping" nor is it performed for applicants' purpose. It is clear in applicants' claims "dry creping" by microcreping means the web is introduced *dry* and physically forced against a gripping drive surface to be mechanically driven forward to collapse to form the ridges and grooves in the overall web.

Also, entirely lacking in citation of Anderson et al. (as was lacking in Wang et al.) is the concept of a web that MUST contain at least 20% of thermoplastic fibers, while simultaneously this web MUST be in both dry-creped and heat-set states.

Anderson et al, like Wang et al, not only lacks motivation to form enduring ridge and groove structure (ground one for failure of the present rejection), Anderson et al. also fails to teach the relationship necessary to achieve the ridge and groove, volume-enhanced web capable

of surviving prolonged presence of wet wipe liquid or repeated squeezing (ground two for failure of the present rejection).

Furthermore respecting claims 3-8, neither reference teaches a product having coarse distribution of creped durable *scrubbing edges*.

Still furthermore, by far the most preferred content of applicants' thermoplastic fibers is 1/3 and more, see claims 8 and 48. Indeed most preferred is about half the fibers being the thermoplastic fibers, claim 9. Neither cited reference has such a large quantity of thermoplastic fibers. Each has 30% or less! Wang et al. col. 4, lines 31, 32 "from about 0% to about 30%, more preferably up to about 5%" and Anderson et al. at col. 6, lines 59 and 60 "from about 5% to about 30%... particularly from about 10% to 20%..."

(3) THE ANDERSON ET AL "MICROCREPING...A MECHANICAL SOFTENING STEP" IS NOT DRY CREPING OR DRY MICROCREPING, WITH HEAT SET OF CONSTITUENT THERMAL PLASTIC FIBERS AS REQUIRED IN THE CLAIMS

The passing mention of an optional further "Microcreping...a mechanical softening step" in column 13 in the Anderson et al. disclosure, lines 55-64, is to *soften* a pattern bonded product.

The Anderson et al. use of the term "microcreping" is to refer to a softening step in which the web is creped from a creping drum, such as a Yankee drier...", Anderson et al., col. 13, lines 61-63. Creping from a Yankee drier employs introducing a ***wet web*** to a drier drum and typically produces one-sidedness to the treatment. The drying is typically achieved by heating the drier drum with low pressure steam, the temperature of which may be below that required for heat setting of web grade thermoplastic fibers.

As the present claims specify, the web of the present invention has a dry creped, heat-set, form with ridges and grooves in the overall body of the web. This is the result from the web having been "introduced dry" and "pressed with a pressing surface against a gripping drive surface and driven forward to collapse against retarded material while at heat-set temperature". ***This is not creping from a drum such as a Yankee drier.***

Furthermore, referring to claims 3-8, Anderson fails to teach a ***coarse*** distribution of ***scrubbing edges*** nor, referring to claim 8, a thermoplastic fiber content between 1/3 and 2/3 by weight of the web, nor, claim 9, about half the fibers being thermoplastic fibers.

IV. Conclusion

We submit, the products of the claims now clarified are not fairly taught by the cited references.

For the reasons given all claims as now presented are submitted to be allowable over the cited references and early favorable action is requested.

Should this ground of rejection be maintained (as we sincerely hope not), the Examiner is respectfully requested to address specifically each of grounds (1), (2), and (3), given above.

Enclosed is a $510.00 check for the Petition for Extension of Time fee. Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

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